

Question 1: The role of government in resource allocation**Suggested answers**

- (a) Using information in Extract 1, compare the government spending as a percentage of GDP in the UK to that in other countries. [3]

Difference

- UK government spending as a percentage of GDP is 3rd highest of all the countries shown in Table 1 whilst Singapore is the lowest.
- Over the period 2008 to 2016, UK government spending as a % of GDP has fallen but Singapore government spending as % of GDP was relatively constant.

Similarity

From 2009 to 2011, both UK and Singapore's government spending as % of GDP fell.

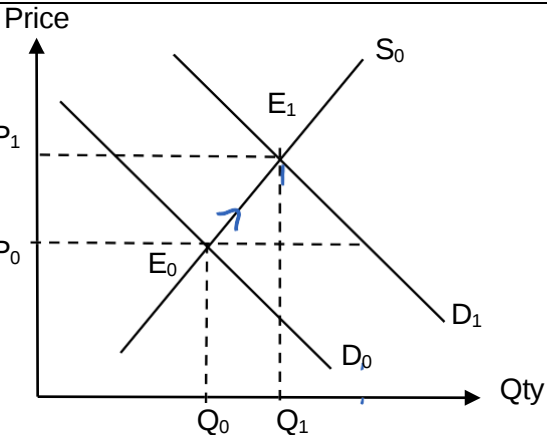
- (b) Using information from Extract 2A, identify and explain three factors that have caused the demand for passenger transport in the UK to change. [6]

Evidence	Factor	Explanation
Population size	Population size	Increase in population size means there was a greater number of people who need to commute → Demand increases.
Level of economy activity	Changes in income level	During the financial crisis in 2007—2008, there was a fall in the level of economic activity and thus a fall in national incomes and rise in unemployment. Hence, fewer people travel either to work, for business or leisure purposes. This led to a fall in demand for passenger transport as train and bus trips are normal goods.
Train and bus fares went up	Price of related goods (Substitutes)	Motor vehicles and public transport are close substitutes. When public transport fares increased, this led to a fall in quantity demanded for public transport as people switched over to the <u>relatively</u> cheaper alternative. Thus demand for travel by cars/motor vehicles increased.

1m for evidence + 1m for explanation

- (c) Using supply and demand analysis, explain the conclusion reached in Extract 2B that 'the usual market adjustment process simply does not work' in the UK housing market. [6]

Usual Market adjustment process	Why it did not work...
• With rising prices, perhaps due to an increase in demand, at current price P_0, there will be a shortage of QdQs. • Consumers will bid up prices. • Producers are incentivised to step up production because of the higher prices and profits and so quantity supplied of	However, with rising prices, instead of causing a fall in quantity demanded, "it has instead caused an increase in demand" due to a change in expectations of future prices. Buyers expect future housing prices to increase and so they would rather buy now at a lower price rather than have to fork out more to buy the

housing increases. Quantity demanded falls as some consumers are unable or unwilling to pay the higher prices. This adjustment process will continue until quantity supplied = quantity demanded at a new equilibrium at E_1 where equilibrium price and quantity of housing has increased to P_1 and Q_1 respectively.	same unit later. The rise in demand caused further shortages and also further increases in prices. Secondly, expectation of future prices has also caused homeowners to withhold (decrease) supply currently, which again reinforces shortages and increases prices.
	Thirdly, Britain's strict planning laws made it "difficult for supply to increase in response to increases in demand". In short, the conclusion was reached based on the observation that the increase in housing prices did not seem to reduce the shortage problem when in fact, there were other demand and supply factors that change at the same time and this resulted in a persistent shortage of housing.

- (d) **Given the relationship that exists between price elasticity of demand (PED) and total revenue, explain and comment on the claim in Extract 2C that the rate of indirect tax on scotch whisky should be cut.** [8]

Introduction

The SWA called for a cut in tax rate on whisky and claimed that the tax cut would increase the government's tax revenue. In addition, the action would help to support a large number of jobs and support exports and economic growth of Scottish and the UK economies.

Body

Extract 2C states that "when government increase tax by 3.9%, UK demand fell so much". This indicates that the demand for whisky is price elastic. This is because when government increase tax, cost of production rise and producers reduce supply, leading to a shortage and increase in price. "Demand fell so much" indicates more than proportionate fall in quantity demanded, indicating that demand is price elastic.

Therefore, SWA claims that a cut in tax rate on whisky will increase government tax revenue. This is because when the government cuts the tax rate, this will lead to lower costs and hence increase in supply as producers find it more profitable to do so. The increase in supply of whisky will lead to surplus and lower prices of whisky. Since demand for whisky is price elastic, there will be more than proportionate increase in the quantity demanded, which will increase government tax revenue (tax per unit $\times$ qty) more than the loss in tax revenue from the fall in per unit tax. Hence extract states that in 2015, "when the government cut tax by 2%, the government tax revenue increased by 4%".

There are other reasons put forward to support the tax cut. The whisky industry plays a significant role in the economy. According to Ext 2C, the industry supports 40,000 jobs and accounts for more than \$4 billion in exports. The tax cut would lower whisky prices and increase consumption thereby stimulating the growth of this industry.

However, the claim that the tax rate should be cut might not be substantiated. This is because the claim is based on the PED analysis with the assumption of *ceteris paribus*. In reality, other factors can be changing concurrently and a cut in tax rate may not increase government's tax revenue nor producers' total revenue. For example, if there is a change in taste and preference away from whisky, demand would fall and equilibrium price and equilibrium quantity would fall. Both producers' revenue and government tax revenue would fall, even with a cut in the tax on whisky.

In addition, the observation made by SWA that demand is price elastic was in the year 2015. There are many factors that have changed since then that could have changed the value of price elasticity of demand or supply of whisky. As such, its claim that a cut in tax could increase tax revenue could no longer be supported.

Furthermore, the tax rate should not be cut despite the possible job creations. This is because consumption of whisky generates negative externalities which are not taken into account by consumers and producers, leading to over-consumption of whisky and over-allocation of resources to the industry. Hence from the efficiency perspective, the tax rate should not be cut

Conclusion

The tax cut would certainly benefit whisky producers and the industry as a whole as well as its employees because of an increase in consumption and total revenue due to its lower prices. Nonetheless the effect of the tax cut on government's tax revenue is uncertain. The government must have sufficient accurate data on the values of PED to be sure of the effect of the tax cut on tax revenue. Even if the tax cut leads to an increase in tax revenue, the other effects of consuming alcohol on society must be considered and weighed against the benefits on employment before a decision is made. Hence overall the claim is not substantiated.

(e) The UK government regards 'sustainable transport' such as bus travel and rail travel as generating positive externalities.

(i) Taking bus travel or rail travel as an example, explain carefully what is meant by a 'positive externality'. [2]

Positive externalities arising from an economic activity are the benefits to third parties that are not taken into account by those who undertake the activity.

By consuming sustainable transport, it allows for less pollution to be emitted from non-sustainable transport options and with cleaner air, people are less likely to fall sick, benefiting employers and firms who are the third parties with lower absenteeism and higher productivity, allowing them to earn increased profits (monetary positive spillover effects).

1m for who are the third parties and 1m for identify the positive externality in monetary terms

(ii) Discuss the view that a government decision to subsidise bus travel and rail travel is the best policy to improve resource allocation when positive externalities exist. [10]

Introduction

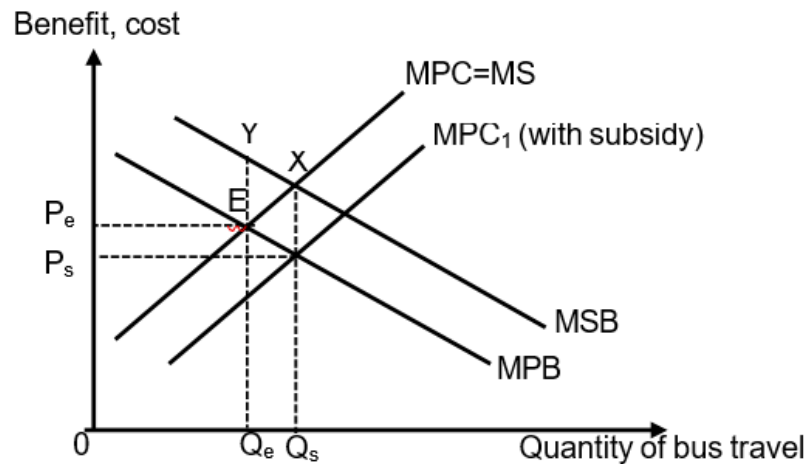
When positive externalities exist such as that in sustainable transport, the market fails to achieve efficiency in resource allocation. There will be under-consumption of sustainable transport because its benefits to society is under-valued by the consumers and firms. There are many ways in which the government can intervene to improve resource allocation i.e. encourage more people to use sustainable transport and this includes giving a subsidy or to improve the transport infrastructure in the country.

Body

P1: When positive externalities exist, the consumption of sustainable transport will be less than socially optimal. This means there is under-allocation of resources in sustainable transport sector.

Analysis (Briefly explain the problem. Last sentence link to Qn phrasing about resource allocation) When there are positive externalities, marginal social benefit exceed marginal private benefit of rail/bus travel. Consumers and producers make decision based on marginal private benefit (MPB) and marginal private cost (MPC) thus ignoring the positive externalities that exist and consume Q_e . But the social optimal level of consumption is Q_s . Hence there is under-consumption of rail/bus travel as $Q_e < Q_s$. Deadweight loss to society of area EXY occurs and this is due to net benefit to society that are not realised due to under-allocation of resources to sustainable transport.

P2: When a subsidy is given to producers of bus travel, the amount of subsidy per unit of travel is equal to Marginal External Benefit, the cost is reduced to MPC_1 . This leads to a fall in price of travel and increase consumption to Q_s .



Evaluate the use of subsidy for sustainable transport

- Effectiveness depends on PED for rail/bus travel. If travel by bus is a good substitute for travel by private car, then the PED is high $\rightarrow$ the fall in relative price of bus will lead to larger increase in its quantity demanded $\rightarrow$ subsidy is more effective. Otherwise if PED is low, the subsidy will not result in a large drop in bus travel.
- Subsidy increases government expenditure $\rightarrow$ opportunity cost is involved. Govt needs to weigh the benefits of spending on subsidy against the value of alternative benefits forgone had the tax revenue been used to finance other expenditures like healthcare, housing etc.
- There is also an issue of how much subsidy to grant. Governments often do not have full or accurate information regarding the amount of positive externalities. The benefits to third parties are difficult to compute and at best only an estimate. As such, if the government over-subsidises, over-consumption will result. However, because the government can alter the amount of subsidy, it could start by giving a small amount of subsidy and later increase if the amount is not sufficient to bring about efficient outcomes.

P3: An alternative measure to increase the use of sustainable transport is to improve its infrastructure.

Analysis:

One of the key reasons why commuters are less willing to switch from public to private transport is the convenience, comfort and time saved because using private transport enables them to reach from point to point. As such improvement in sustainable public transport involves improve the connectivity between bus and rail journeys such that commuters travel experience is seamless and convenient, increase the frequency of buses/trains to reduce waiting times, increase reach in terms of building more stop stations, and also more comfortable and safer, less crowded train/bus journeys.

With such improvements, consumers' perceptions of train and bus travel will improve, hence encouraging them to use or demand sustainable transport more frequently.

Evaluate

To improve the sustainable transport infrastructure requires large sums of money. Also it requires a long time to study, plan and build the new system.

P4: Compare using criteria (e.g. STRAW) the two policies

Time period: The use of a subsidy for sustainable transport will be able to improve resource allocation within a shorter period of time compared to that of improving the infrastructure.

Costs: Also, subsidy is less costly relative to spending on planning and building/improving an existing network of sustainable transport. In addition, the construction of new train lines e.g. will incur external costs to society and this should be considered too.

Assumptions: A subsidy works well assuming PED for sustainable transport is highly price elastic. But when people favour private transport for its convenience and comfort, then improving public transport though costly, might be a better solution.

EV

Hence, from the discussion above, subsidy certainly has a role to play in encouraging people to make the switch but a long-term solution, though costly now, may reduce the need for much subsidy when people are willing to pay more for a more convenient and comfortable ride on sustainable transport.

- (f) **‘Government interference with the freely operating market mechanism, whether for reasons of efficiency or equity, inevitably creates more problems than it solves. Discuss the extent to which this is a valid assertion.** [10]

Command word: Discuss the extent

“Valid” – the claim can be supported or substantiated strongly with economic reasoning and / or evidence from case.

Content word: Government interference, freely operating market mechanism, efficiency, equity, creates more problems than it solves

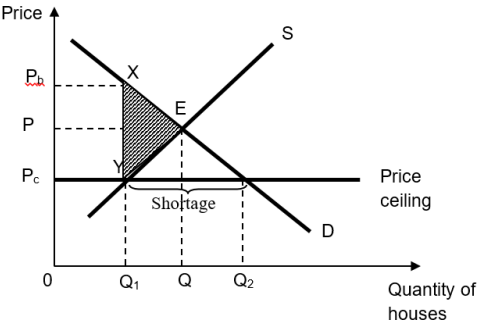
Context: Give your own example using evidence from the Extracts.

Case 1: Govt intervenes in sugary drinks market (ext 2D) for Efficiency reason: Sugary drinks generate negative externalities eg health problems like obesity → fall in productivity due to health problems → loss of output/revenue for firms.	
Effective solution to problem • Impose sugar tax = MEC at Q_s level → increase the cost of producing sugary drinks → producers pass on the higher cost of production to consumers → reduce to Q_s level • Producers and consumers internalise the negative externalities • tax helps to improve allocative efficiency in the market for sugary drinks • Change of behaviour for manufacturers to reduce sugar content to avoid the tax	Tax creates more problems If the government were to over-tax, due to imperfect information in calculating the precise value of MEC, then it may cause quantity consumed to be even lesser than Q_s at Q_{e1}, causing under-allocation of resources to the sugary drink market and thus a deadweight loss (area A) to be potentially greater than the initial deadweight loss (area B). This therefore causes more problems than it solves, since the extent of allocative inefficiency is even higher than if the government were to not intervene. Tax on the product could also lead to job loss in the industry as consumption falls.
EV: The problem of over-tax is not inevitable and hence the claim is not valid to some extent. With the advancement in technology and greater availability of current data, esp for developed countries like UK, it is possible for authorities to obtain a more accurate and complete assessment of the externality and the monetary costs associated sugary drinks. In addition, the government could start with a low tax and since tax is flexible it could adjust the tax rate over time to achieve the desired effect. In fact, in the sugary drinks markets, manufacturers themselves responded by reducing sugar content of their drinks to avoid the impending tax. Because of these, government intervention in this market brings more benefit than creates problems.	

Case 2:

Govt intervenes in housing market for Equity reason: Extract 2B housing → equity issues such as affordability for lower income group

- If left to the free market, the price mechanism helps to solve the problems, of what and how much, how and for whom to produce. As resources are allocated through the price mechanism, the free play of market forces of demand and supply determine the price which then acts as a signal to firms to allocate scarce resources.
- Should there be for example increased demand for essential goods such as housing, prices will increase, and only the rich who may have the willingness and ability to pay can be allocated the good. Hence, such prices may deprive the poor of their access to such good.

Effective solution	Intervention Creates problems
• Assuming the government is able to do means testing to identify the group of people who qualify for the 'help to buy' scheme, such intervention, (similar to that of a subsidy for the poor only) enables this particular group of people to gain access to an essential good like housing. • Means-testing is a method to calculate the subsidies each household receive based on their household income and other factors to ensure lower-income families receive more than higher-income households.	• Government implements the "help to buy scheme" to enable low-income households to have access to housing. • However DD and hence price increased, where only potentially the rich can afford. • This worsens inequity, there could be a group of people, especially those not part of the help to buy scheme, are priced out of the market. • Producers only respond to the prices and dollar votes that the rich may place on housing → only allocate resources to produce housing for the rich, rather than for e.g. basic housing for the poor, therefore worsening equity.
• Use of price control to prevent prices of housing from increasing further • Prices are set below equilibrium price at P_c → firms are only permitted to sell at or below this upper limit. • To keep houses affordable 	• quantity exchanged falls from $0Q$ to $0Q_1$ because producers are only willing to supply $0Q_1$ even though the quantity demanded increased to $0Q_2$. • The size of the shortage depends on the price elasticities of demand and supply. • $PES < 1$: difficult for developers to increase the number of houses in the short run • $PED < 1$: lack of close substitutes for houses • shortages → cause queues, waiting lists or the restriction of sales by firms to favoured customers. • Worsen the group of low-income people which the policy intended to help. • Moreover, at Q_2, society values each additional unit of the good more than what it costs society to produce it. More resources should have been allocated to the production of rice for consumption by society. The shaded area → total monetary value of deadweight loss to society because it was not produced.

Synthesis and Conclusion

Some markets can fail to achieve efficiency and equity and these problems can persist even in the long run. Hence there is good reason for government intervention as illustrated in the markets for sugary drinks and sustainable transport. In some instances, government intervention creates some problems. Some of these problems are inevitable e.g. when the government tax on sugary drinks, this could lead to loss of jobs in the industry. But other problems such as over-taxing may be overcome with better quality data and the government's ability to fine-tune its policies for maximum effectiveness. As such, with more sophisticated technology and experience, the government is able to design effective policies that do not cause much problems and at the same time, adopt other policies to minimise the extent of problem. Hence, the assertion is valid only to some extent as government intervention for efficiency or equity reasons does not create more problems than it solves.